

Remarks

Claims 1, 6-7, 9-12, 14-16, 17-38 and 44-46 are pending. Claims 4, 5, 16 and 47 are canceled in this Response.

Allowable Subject Matter

Claim 9 was objected to as being dependent on a rejected base claim. Claim 9 has been rewritten as an independent claim incorporating all of the limitations of the base claim.

Rejections Based On Ossipov

Claims 4, 6-7, 16-17, 25-27, 44 and 46 were rejected under Section 103 as being obvious over various references in view of Ossipov (20030071256). As detailed below, Ossipov cannot be relied on to preclude the patentability of any claims.

Claim 1 has been amended to incorporate the limitations of Claim 4 and, accordingly, Claim 4 has been canceled.

Claim 6 has been rewritten as an independent claim incorporating all of the limitations of the base claim. Claim 7 depends from Claim 6.

Claim 10 has been amended to incorporate the limitations of Claim 16 and, accordingly, Claim 16 has been canceled. Claims 11-12, 14-15, 17-24 and 28-38 depend from Claim 1 (directly or indirectly through an intervening claim).

Claim 25 has been rewritten as an independent claim incorporating all of the limitations of the base claim. Claims 26-27 depend from Claim 25.

Claims 45 and 46 depend from Claim 44.

With the removal of Ossipov as a prior art reference, therefore, all pending claims are allowable.

Ossipov Does Not Preclude Patentability

Ossipov Is Not Prior Art Under 102(a). The Rule 131 Declaration of the inventors and the documents attached to the Declaration show that the claimed subject matter was conceived before the date Ossipov was published and a constructive reduction to practice was pursued thereafter with reasonable diligence. Ossipov, therefore, is not prior art under Section 102(a).

Disclosing The Claimed Subject Matter. Claims 1, 6 and 9 recite methods for making a flat emitter. The Invention Disclosure describes two methods for making a flat emitter. Claim 1, for example, recites:

forming a first single crystal electron source layer on an underlying second single crystal electron source layer (Invention Disclosure pages 2 and 7 -- deposit epitaxial semiconductor layer on n+ doped silicon, note reference to single crystal films in the Problems Solved section on page 2);

defining an emission region in said first single crystal electron source layer (Invention Disclosure page 7 -- define emitter area);

forming at least a first epitaxial layer on said first single crystal electron source layer (Invention Disclosure pages 2 and 7 -- deposit epitaxial dielectric layer on the semiconductor layer); and

forming a thin epitaxial conductor layer on said at least a first epitaxial layer (Invention Disclosure pages 2 and 7 -- deposit thin epitaxial metal).

Claims 10, 25 and 44 recite an electron emitter. The Invention Disclosure describes two embodiments of an electron emitter. The emitter of Claim 25, for example, includes:

a single crystal electron source including an emission region (Invention Disclosure pages 2 and 7 -- define emitter area, note reference to single crystal films in the Problems Solved section on page 2);

an epitaxial thin conductor layer (Invention Disclosure pages 2, 6 and 7 -- Epi Thin Metal, deposit thin epitaxial metal);

an epitaxial dielectric layer between said single crystal electron source and said thin conductor layer (Invention Disclosure pages 2, 6 and 7 -- Epi Diel, deposit epitaxial dielectric layer on the semiconductor layer); and

an epitaxial semi-conductor layer sandwiched between said electron source and said epitaxial dielectric layer (Invention Disclosure pages 2, 6 and 7 -- Epi Semiconductor, deposit epitaxial semiconductor layer on n+ doped silicon).

Reasonable Diligence. The critical period for diligence begins just prior to the April 17, 2003 publication date of Ossipov and continues until the July 23, 2003 filing date of this patent application. The claimed subject matter is documented in an Invention Disclosure assigned no. 200210020. A copy of the Invention Disclosure is attached as Exhibit A to the inventors' Declaration. The Invention Disclosure was assigned to outside patent counsel Steve Fallon and Tom Fitzsimons at the firm of Greer, Burns and Cain to prepare the patent application. On April 16, 2003, the inventor approved draft patent application was submitted to Tim Myers, the HP in-house lawyer handling the case. Mr. Myers communicated his comments on the

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draft to Mr. Fitzsimons, and on May 7, 2003 Mr. Fitzsimons emailed us a revised/second draft patent application incorporating Mr. Myers' comments. We approved the revised/second draft patent application on May 14, 2003. Copies of the April 16, May 7, and May 14 correspondence are attached to the inventors' Declaration as Exhibits B, C and D respectively.

Mr. Fitzsimons submitted the revised/second draft patent application to Mr. Myers on May 22 and Mr. Myers approved the draft for filing on June 10, 2003. On June 20, 2003, the finalized patent application and the signature papers prepared by Mr. Fitzsimons's office were sent to HP for signing and filing. The application was filed on July 23, 2003. Copies of the May 22 and June 10 and 20 correspondence are attached to the inventors' Declaration as Exhibits E, F and G respectively.

Reasonable diligence is established where, as here, the attorney(s) worked reasonably hard on the application during the critical period, April 16 to July 23. MPEP 2138.06. During this three month period, the attorneys working on the patent application conducted a first round of in-house review of the draft application, revised the application based on the first in-house review, submitted the revised application to the inventors for approval and then to HP legal for a second in-house review, prepared the signature papers and finalized the application, circulated the signature papers for signing, and filed the patent application.

Ossipov Does Not Preclude Patentability Under 103(c).

Ossipov can qualify as prior art only under Section 102(e). Hewlett-Packard Development Company (or its predecessor in interest Hewlett-Packard Company) owned Ossipov and the present Application at the time of the invention, as is evident from the assignments of Ossipov recorded March 1, 2002 and September 30, 2003 at reel/frame 012657/0591 and 014061/0492, respectively, and the assignment of this Application recorded July 23, 2003 at reel/frame 014329/0131. Pursuant to Section 103(c), therefore, Ossipov does not preclude the patentability of the pending claims.

All pending claims are in condition for allowance.

The foregoing is believed to be a complete response to the outstanding Office Action.

Respectfully submitted,



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